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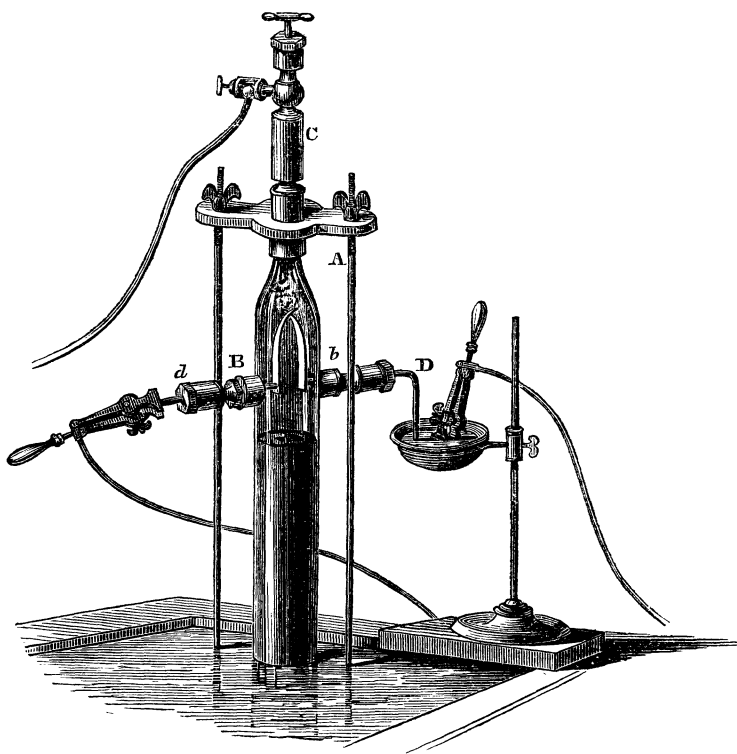
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## ARTICLE X.

*Engraving and Description of an Apparatus for the Decomposition and Recomposition of Water, employed in the Laboratory of the Medical Department of the University of Pennsylvania. By R. Hare, M. D., Professor of Chemistry. Read December 7, 1838.*

HAVING to illustrate the decomposition and recombination of water to a class of between three and four hundred pupils, I have found it expedient to exhibit the process on an extensive scale.

For many years I have employed a glass tube, of about an inch and a half in bore, and about two feet in height.

The tube (A), which I have used for three years past, has been furnished with two tubulures (B, b), about three inches below the upper extremity, where it converges to an apex, having an aperture not larger than a goose quill. Upon this apex there is an iron cap, in which a

female screw is wrought so as to allow a large iron valve cock (C) to be screwed to it.

Upon the tubulures also iron caps are cemented, which are so wrought as, with the aid of appropriate screws, to constitute stuffing boxes.

Through each of these a platina rod (D, *d*) is introduced, and fastened to plates of platina, to act as "*electrodes*," agreeably to the language of the celebrated Faraday.

The tube being supported over the mercurial cistern, by means of a communication with an air pump, through the valve cock and flexible leaden pipe, the bore of the tube is exhausted of air, so as to cause the mercury to take its place.

The mercury is so far displaced by a solution of borax, consisting of equal parts of water and saturated solution of that salt, as to sink the surface of the column of metal in the tube about an inch or more below the "*electrodes*." The projecting end of one of the rods (D, *d*), to the other ends of which the "*electrodes*" are severally attached, is bent at right angles outside of the tube, so as to enter some mercury in an iron capsule, supported purposely at a proper height, and communicating with one end of my deflagrator of an hundred pairs of Cruickshank plates of about eight inches by fourteen. Of course the rod of the other electrode must have a communication with the other end of the deflagrator. Under these circumstances, if the circuit be completed by throwing the acid on the plates of the deflagrator, a most rapid evolution of hydrogen and oxygen will ensue in consequence of the decomposition of the water, so that within a few seconds, several cubic inches of gas will be collected.

The action being now suspended by throwing the acid off the plates, and the foam being allowed to subside, the resulting gaseous mixture may be ignited, and of course condensed, by completing the circuit again as at first, and at the same time causing the ends of the "*electrodes*" to come into contact with each other, and thus to produce a spark.

This contact is effected by causing a very slight movement in the rod, bent at right angles, and entering the mercury in the iron capsule. Of course the process may be repeated as often as can be reasonably desired.